

DEPARTMENT OF ENERGY AND ENVIRONMENT

NOTICE OF PROPOSED RULEMAKING

Water Quality Standards - 2016 Triennial Review

The Director of the Department of Energy and Environment (DOEE or Department), in accordance with the authority set forth in the District Department of the Environment Establishment Act of 2005, effective February 15, 2006 (D.C. Law 16-51; D.C. Official Code § 8-151.01 *et seq.* (2013 Repl. and 2016 Supp.)); sections 5 and 21 of the Water Pollution Control Act of 1984, effective March 16, 1985 (D.C. Law 5-188; D.C. Official Code §§ 8-103.04 and 8-103.20 (2013 Repl. & 2016 Supp.)); and Mayor's Order 98-50, dated April 15, 1998, as amended by Mayor's Order 2006-61, dated June 14, 2006, hereby gives notice of the proposed rulemaking action to amend Chapter 11 (Water Quality Standards) of Title 21 (Water and Sanitation) of the District of Columbia Municipal Regulations (DCMR).

The Department's Water Quality Division is conducting a triennial review of the District of Columbia's Water Quality Standards regulations as required by section 5(a) of the Water Pollution Control Act (D.C. Official Code § 8-103.04(a)) and section 303(c) of the federal Clean Water Act (33 U.S.C. § 1313(c)).

Proposed changes to the water quality standards include updates to the aquatic life criteria for ammonia and cadmium, and human health criteria for ninety-four (94) constituents.

Proposed updates to the ammonia criteria are based on EPA's latest scientific studies and new toxicity data on freshwater mussels and gill-breathing snails in the 2013 Aquatic Life Ambient Water Quality Criteria for Ammonia – Freshwater, published by EPA (EPA 822-R-13-001). Ammonia can be toxic to fish and other invertebrates in waterbodies.

Changes to the aquatic life criteria proposed for cadmium adhere to the 2016 Aquatic Life Ambient Water Quality Criteria – Cadmium (EPA 820-R-16-002). Chronic cadmium exposure leads to adverse effects in the growth, reproductive, immune, and endocrine systems of aquatic organisms, which impacts their development and behavior.

The changes made to the human health criteria are based on the Environmental Protection Agency (EPA's) latest scientific studies in the 2015 Human Health Water Quality Criteria. The revised standards for these organic constituents are intended to protect residents and visitors from exposure to these pollutants, particularly for those who eat fish or shellfish from District waters as a significant portion of their regular diet.

DOEE is also proposing changes to the *E. coli* recreational water quality criteria based on EPA's 2012 Recreational Water Quality Criteria (EPA 820-F-12-058). The *E. coli* recreational criteria update establishes a new measurement of "statistical threshold value" and a new unit of measurement of "colony forming unit." The previous *E. coli* criteria used a measurement of "single sample maximum" and a unit of "most probable number." The duration for the geometric mean criteria will be updated from 30 days to 90 days.

Finally, the proposed rulemaking updates abbreviations and definitions. All other provisions, tables, and definitions in the Water Quality Standards chapter remain unchanged.

Before the final water quality standards are promulgated, DOEE will conduct an analysis of the environmental, technological, institutional, and socio-economic impacts of applying and enforcing the proposed standards as required by the Water Pollution Control Act, D.C. Official Code § 8-103.04. The public is invited to present information and comments regarding the scope and approach for conducting the required impact analysis of the above proposed regulations.

Title 21 of the District of Columbia Municipal Regulations, Chapter 11 (Water Quality Standards), is amended as follows:

Section 1104.8 is amended to read as follows:

1104.8 Unless otherwise stated, the numeric criteria that shall be met to attain and maintain designated uses are as follows in Tables 1 through 3:

Table 1: Conventional Constituents Numeric Criteria

Constituent ^a	Class A	Class B	Class C
Chlorophyll <i>a</i> ^{b,c} (µg/L)(seasonal segment average)			
July 1 through September 30	—	—	25
Dissolved Oxygen (mg/L)			
Instantaneous minimum (year-round) ^d	—	—	5.0
February 1 through May 31 ^{b,c}			
7-day mean	—	—	6.0
Instantaneous minimum	—	—	5.0
June 1 through January 31 ^{b,c}			
30-day mean	—	—	5.5
7-day mean	—	—	4.0
Instantaneous minimum ^e	—	—	3.2
<i>E. coli</i> ^f (colony forming units (cfu)/100 mL)			
90-day Geometric mean (GM)	126	—	—
Statistical Threshold Value (STV)	410	—	—
Hydrogen Sulfide (maximum µg/L)	—	—	2.0
Oil and Grease (mg/L)	—	—	10.0
pH			
Greater than	6.0	6.0	6.0
And less than	8.5	8.5	8.5
Secchi Depth ^{b,c} (m)(seasonal segment average)			
April 1 through October 31	—	—	0.8
Temperature (°C)			
Maximum	—	—	32.2

Constituent ^a	Class A	Class B	Class C
Maximum change above ambient	—	—	2.8
Total Dissolved Gases (maximum % saturation)	—	—	110
Turbidity Increase above Ambient (NTU)	20	20	20

Notes:

^a No more than ten percent (10%) criteria exceedances of the WQS may be allowed when interpreting data for conventional pollutants when assessing water quality standards attainment or impairment status for the purposes of reporting under CWA section 305(b) and listing under CWA section 303(d). Where the ten percent exceedance is not a specific criteria recommendation, the application of the ten percent exceedance assessment will be addressed in an assessment methodology.

The attainment of these WQS or impairment status will be determined in accordance with the following US EPA guidance documents: Guidelines for Preparation of the State Comprehensive Water Quality Assessments 305(b) Reports and Electronic Updates, EPA 841-B-97-002A and B (1997); Consolidated Assessment and Listing Methodology – Toward a Compendium of Best Practices (EPA 1st ed. 2002); and Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d), 305(b), and 314 of the Clean Water Act (Diane Regas, July 29, 2005). Future guidance documents will also be considered when they are issued.

^b Attainment of the dissolved oxygen, water clarity and chlorophyll *a* water quality criteria that apply to tidally influenced Class C waters will be determined following the guidelines documented in the 2003 United States Environmental Protection Agency publication: Ambient Water Quality Criteria for Dissolved Oxygen, Water Clarity and Chlorophyll *a* for the Chesapeake Bay and its Tidal Tributaries, EPA 903-R-03-002 (April 2003, Region III Chesapeake Bay Program Office, Annapolis, Maryland); 2004 Addendum, EPA 903-R-04-005 (October 2004); 2007 Addendum, EPA 903-R-07-003 CBP/TRS 285/07 (July 2007); 2007 Chlorophyll Criterion Addendum, EPA 903-R-07-005 CBP/TRS 288-07 (November 2007); 2008 Addendum, EPA 903-R-08-001 CBP/TRS 290-08 (September 2008); and 2010 Criterion Addendum, EPA 903-R-10-002 CBP/TRS-301-10 (May 2010).

^c Shall apply to tidally influenced waters only.

^d This criterion applies to nontidal waters.

^e At temperatures greater than in tidally influenced waters, an instantaneous minimum dissolved oxygen concentration of 4.3mg/L shall apply.

^f The geometric mean (GM) and statistical threshold value (STV) criteria shall be used for assessing water quality trends, permitting, and all other Clean Water Act applications. The waterbody geometric mean shall not be greater than the ninety-day (90-day) geometric mean magnitude in any continuous ninety-day (90-day) interval. There shall not be greater than a ten percent (10%) excursion frequency of the STV magnitude within the same ninety-day (90-day) interval. *E. coli* shall be measured using EPA-approved culturable Method 1603 or equivalent methods as recommended by the 2012 Recreational Water Quality Criteria, (EPA 820-F-12-

058).

Table 2: Trace Metals and Inorganics Numeric Criteria

Constituent ^a Trace metals and inorganics in $\mu\text{g/L}$, except where stated otherwise (see Notes below)	Class C		Class D ^b
	CCC 4-Day Avg	CMC 1-Hour Avg	30-Day Avg
Ammonia, mg total ammonia nitrogen (TAN)/L	See Note g	See Note h	—
Antimony, dissolved	—	—	640
Arsenic, dissolved	150	340	0.14 ^c
Cadmium, dissolved	See Notes d and e	See Notes d and e	—
Chlorine, total residual	11	19	—
Chromium, hexavalent, dissolved	11 ^d	16 ^d	—
Chromium, trivalent, dissolved	See Notes d and e	See Notes d and e	—
Copper, dissolved	See Notes d and e	See Notes d and e	—
Cyanide, free	5.2	22	400
Iron, dissolved	1,000	—	—
Lead, dissolved	See Notes d and e	See Notes d and e	—
Mercury, total recoverable	0.77 ^d	1.4 ^d	0.15 ^d
Methylmercury (mg/kg, fish tissue residue)	—	—	0.3
Nickel, dissolved	See Notes d and e	See Notes d and e	4,600
Selenium, total recoverable	5	20	4,200
Silver, dissolved	—	See Notes d and e	65,000
Thallium, dissolved	—	—	0.47
Zinc, dissolved	See Notes d and e	See Notes d and e	26,000

Notes:

^a For constituents with blank numeric criteria, EPA has not calculated standards at this time. However, permit authorities will address these constituents in National Pollutant Discharge Elimination System (NPDES) permit actions using the narrative criteria for toxics.

^b The Class D Human Health Criteria for metals will be based on Total Recoverable metals.

^c The criteria is based on carcinogenicity of 10^{-6} risk level.

^d The formulas for calculating the criterion for the hardness dependent constituents indicated above are as follows:

Table 2a: Formulas for Hardness-Dependent Constituents^f

Constituent	CCC $\mu\text{g/L}$	CMC $\mu\text{g/L}$
Cadmium	$e^{(0.7977[\ln(\text{hardness})] - 3.909)}$	$e^{(0.9789[\ln(\text{hardness})] - 3.866)}$
Chromium III	$e^{(0.8190[\ln(\text{hardness})] + 0.6848)}$	$e^{(0.8190[\ln(\text{hardness})] + 3.7256)}$

Constituent	CCC μg/L	CMC μg/L
Copper	$e^{(0.8545[\ln(\text{hardness})] - 1.702)}$	$e^{(0.9422[\ln(\text{hardness})] - 1.700)}$
Lead	$e^{(1.2730[\ln(\text{hardness})] - 4.705)}$	$e^{(1.2730[\ln(\text{hardness})] - 1.460)}$
Nickel	$e^{(0.8460[\ln(\text{hardness})] + 0.0584)}$	$e^{(0.8460[\ln(\text{hardness})] + 2.255)}$
Silver	—	$e^{(1.7200[\ln(\text{hardness})] - 6.590)}$
Zinc	$e^{(0.8473[\ln(\text{hardness})] + 0.884)}$	$e^{(0.8473[\ln(\text{hardness})] + 0.884)}$

^e The criterion derived from the formulas under Note d is multiplied by the conversion factor in Table 2b as specified in subsection 1105.10:

Table 2b: Conversion Factors^f

Constituent	CCC	CMC
Cadmium	$1.101672 - [(\ln \text{hardness})(0.041838)]$	$1.136672 - [(\ln \text{hardness})(0.041838)]$
Chromium III	0.860	0.316
Chromium VI	0.962	0.982
Copper	0.960	0.960
Lead	$1.46203 - [(\ln \text{hardness})(0.145712)]$	$1.46203 - [(\ln \text{hardness})(0.145712)]$
Mercury	0.85	0.85
Nickel	0.997	0.998
Silver	—	0.85
Zinc	0.986	0.978

^f Hardness in Tables 2a and 2b shall be measured as mg/L of calcium carbonate (CaCO₃). The minimum hardness value allowed for use in these formulas shall not be less than 25 mg/L as CaCO₃, even if the actual ambient hardness is less than 25 mg/L as CaCO₃. The maximum hardness value allowed for use in these formulas shall not exceed 400 mg/L as CaCO₃, even if the actual ambient water hardness is greater than 400 mg/L as CaCO₃.

^g Criterion Continuous Concentration (CCC) for total ammonia nitrogen (in mg TAN/L):

(a) The CCC for total ammonia nitrogen (in mg TAN/L) (i) shall be the thirty (30) day average concentration for total ammonia nitrogen computed for a design flow specified in subsection 1105.5; and (ii) shall account for the influence of the pH and temperature as shown in Table 2c. The highest four (4) day average within the thirty (30) day period shall not exceed 2.5 times the CCC.

(b) The CCC in Table 2c was calculated using the following formula, which shall be used to calculate unlisted values: CCC =

$$0.8876 \times \left(\frac{0.0278}{1 + 10^{7.688 - pH}} + \frac{1.1994}{1 + 10^{pH - 7.688}} \right) \times (2.126 \times 10^{0.028 \times (20 - \text{MAX}(T, 7))})$$

**Table 2c: Total Ammonia Nitrogen (in milligrams of total ammonia nitrogen per liter (mg TAN/L))
CCC for Various pH and Temperatures**

Temperature (°C)																								
pH	0-7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
6.5	4.9	4.6	4.3	4.1	3.8	3.6	3.3	3.1	2.9	2.8	2.6	2.4	2.3	2.1	2.0	1.9	1.8	1.6	1.5	1.5	1.4	1.3	1.2	1.1
6.6	4.8	4.5	4.3	4.0	3.8	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1
6.7	4.8	4.5	4.2	3.9	3.7	3.5	3.2	3.0	2.8	2.7	2.5	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1
6.8	4.6	4.4	4.1	3.8	3.6	3.4	3.2	3.0	2.8	2.6	2.4	2.3	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1
6.9	4.5	4.2	4.0	3.7	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0
7.0	4.4	4.1	3.8	3.6	3.4	3.2	3.0	2.8	2.6	2.4	2.3	2.2	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	0.99
7.1	4.2	3.9	3.7	3.5	3.2	3.0	2.8	2.7	2.5	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0	0.95
7.2	4.0	3.7	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.0	0.96	0.90
7.3	3.8	3.5	3.3	3.1	2.9	2.7	2.6	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.0	0.97	0.91	0.85
7.4	3.5	3.3	3.1	2.9	2.7	2.5	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.0	0.96	0.90	0.85	0.79
7.5	3.2	3.0	2.8	2.7	2.5	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0	0.95	0.89	0.83	0.78	0.73
7.6	2.9	2.8	2.6	2.4	2.3	2.1	2.0	1.9	1.8	1.6	1.5	1.4	1.4	1.3	1.2	1.1	1.1	0.98	0.92	0.86	0.81	0.76	0.71	0.67
7.7	2.6	2.4	2.3	2.2	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1.0	0.94	0.88	0.83	0.78	0.73	0.68	0.64	0.60
7.8	2.3	2.2	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0	0.95	0.89	0.84	0.79	0.74	0.69	0.65	0.61	0.57	0.53
7.9	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.0	0.95	0.89	0.84	0.79	0.74	0.69	0.65	0.61	0.57	0.53	0.50	0.47
8.0	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1.0	0.94	0.88	0.83	0.78	0.73	0.68	0.64	0.60	0.56	0.53	0.50	0.44	0.44	0.41
8.1	1.5	1.5	1.4	1.3	1.2	1.1	1.1	0.99	0.92	0.87	0.81	0.76	0.71	0.67	0.63	0.59	0.55	0.52	0.49	0.46	0.43	0.40	0.38	0.35
8.2	1.3	1.2	1.2	1.1	1.0	0.96	0.90	0.84	0.79	0.74	0.70	0.65	0.61	0.57	0.54	0.50	0.47	0.44	0.42	0.39	0.37	0.34	0.32	0.30
8.3	1.1	1.1	0.99	0.93	0.87	0.82	0.76	0.72	0.67	0.63	0.59	0.55	0.52	0.49	0.46	0.43	0.40	0.38	0.35	0.33	0.31	0.29	0.27	0.26
8.4	0.95	0.89	0.84	0.79	0.74	0.69	0.65	0.61	0.57	0.53	0.50	0.47	0.44	0.41	0.39	0.36	0.34	0.32	0.30	0.28	0.26	0.25	0.23	0.22
8.5	0.80	0.75	0.71	0.67	0.62	0.58	0.55	0.51	0.48	0.45	0.42	0.40	0.37	0.35	0.33	0.31	0.29	0.27	0.25	0.24	0.22	0.21	0.20	0.18
8.6	0.68	0.64	0.60	0.56	0.53	0.49	0.46	0.43	0.41	0.38	0.36	0.33	0.31	0.29	0.28	0.26	0.24	0.23	0.21	0.20	0.19	0.18	0.16	0.15
8.7	0.57	0.54	0.51	0.47	0.44	0.42	0.39	0.37	0.34	0.32	0.30	0.28	0.27	0.25	0.23	0.22	0.21	0.19	0.18	0.17	0.16	0.15	0.14	0.13
8.8	0.49	0.46	0.43	0.40	0.38	0.35	0.33	0.31	0.29	0.27	0.26	0.24	0.23	0.21	0.20	0.19	0.17	0.16	0.15	0.14	0.13	0.13	0.12	0.11
8.9	0.42	0.39	0.37	0.34	0.32	0.30	0.28	0.27	0.25	0.23	0.22	0.21	0.19	0.18	0.17	0.16	0.15	0.14	0.13	0.12	0.12	0.11	0.10	0.09
9.0	0.36	0.34	0.32	0.30	0.28	0.26	0.24	0.23	0.21	0.20	0.19	0.18	0.17	0.16	0.15	0.14	0.13	0.12	0.11	0.11	0.10	0.09	0.09	0.08

^h Criterion Maximum Concentration (CMC) for total ammonia nitrogen (in mg TAN/L):

(a) The CMC for total ammonia nitrogen (in mg TAN/L) (i) shall be the one (1) average concentration for total ammonia nitrogen, computed for a design flow specified in Subsection 1105.5; and (ii) shall account for the influence of the pH as shown in Table 2d.

(b) The CMC was calculated using the following formula, which shall be used to calculate unlisted values: CMC =

$$\text{MIN} \left(\left(\frac{0.275}{1 + 10^{7.204 - \text{pH}}} + \frac{39.0}{1 + 10^{\text{pH} - 7.204}} \right) \right), \\ \left(0.7249 \times \left(\frac{0.0114}{1 + 10^{7.204 - \text{pH}}} + \frac{1.6181}{1 + 10^{\text{pH} - 7.204}} \right) \times (23.12 \times 10^{0.036 \times (20 - T)}) \right)$$

**Table 2d: Total Ammonia Nitrogen (in milligrams of total ammonia nitrogen per liter (mg TAN/L)
CMC for Various pH and Temperatures**

Temperature (°C)																					
pH	0-10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
6.5	51	48	44	41	37	34	32	29	27	25	23	21	19	18	16	15	14	13	12	11	9.9
6.6	49	46	42	39	36	33	30	28	26	24	22	20	18	17	16	14	13	12	11	10	9.5
6.7	46	44	40	37	34	31	29	27	24	22	21	19	18	16	15	14	13	12	11	9.8	9.0
6.8	44	41	38	35	32	30	27	25	23	21	20	18	17	15	14	13	12	11	10	9.2	8.5
6.9	41	38	35	32	30	28	25	23	21	20	18	17	15	14	13	12	11	10	9.4	8.6	7.9
7.0	38	35	33	30	28	25	23	21	20	18	<u>17</u>	15	14	13	12	11	10	9.4	8.6	7.9	7.3
7.1	34	32	30	27	25	23	21	20	18	17	15	14	13	12	11	10	9.3	8.5	7.9	7.2	6.7
7.2	31	29	27	25	23	21	19	18	16	15	14	13	12	11	9.8	9.1	8.3	7.7	7.1	6.5	6.0
7.3	27	26	24	22	20	18	17	16	14	13	12	11	10	9.5	8.7	8.0	7.4	6.8	6.3	5.8	5.3
7.4	24	22	21	19	18	16	15	14	13	12	11	9.8	9.0	8.3	7.7	7.0	6.5	6.0	5.5	5.1	4.7
7.5	21	19	18	17	15	14	13	12	11	10	9.2	8.5	7.8	7.2	6.6	6.1	5.6	5.2	4.8	4.4	4.0
7.6	18	17	15	14	13	12	11	10	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5
7.7	15	14	13	12	11	10	9.3	8.6	7.9	7.3	6.7	6.2	5.7	5.2	4.8	4.4	4.1	3.8	3.5	3.2	2.9
7.8	13	12	11	10	9.3	8.5	7.9	7.2	6.7	6.1	5.6	5.2	4.8	4.4	4.0	3.7	3.4	3.2	2.9	2.7	2.5
7.9	11	9.9	9.1	8.4	7.7	7.1	6.6	3.0	5.6	5.1	4.7	4.3	4.0	3.7	3.4	3.1	2.9	2.6	2.4	2.2	2.1
8.0	8.8	8.2	7.6	7.0	6.4	5.9	5.4	5.0	4.6	4.2	3.9	3.6	3.3	3.0	2.8	2.6	2.4	2.2	2.0	1.9	1.7
8.1	7.2	6.8	6.3	5.8	5.3	4.9	4.5	4.1	3.8	3.5	3.2	3.0	2.7	2.5	2.3	2.1	2.0	1.8	1.7	1.5	1.4
8.2	6.0	5.6	5.2	4.8	4.4	4.0	3.7	3.4	3.1	2.9	2.7	2.4	2.3	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2
8.3	4.9	4.6	4.3	3.9	3.6	3.3	3.1	2.8	2.6	2.4	2.2	2.0	1.9	1.7	1.6	1.4	1.3	1.2	1.1	1.0	0.96
8.4	4.1	3.8	3.5	3.2	3.0	2.7	2.5	2.3	2.1	2.0	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1.0	0.93	0.86	0.79
8.5	3.3	3.1	2.9	2.7	2.4	2.3	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.2	1.1	0.98	0.90	0.83	0.77	0.71	0.65
8.6	2.8	2.6	2.4	2.2	2.0	1.9	1.7	1.6	1.5	1.3	1.2	1.1	1.0	0.96	0.88	0.81	0.75	0.69	0.63	0.58	0.54
8.7	2.3	2.2	2.0	1.8	1.7	1.6	1.4	1.3	1.2	1.1	1.0	0.94	0.87	0.80	0.74	0.68	0.62	0.57	0.53	0.49	0.45
8.8	1.9	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1.0	0.93	0.86	0.79	0.73	0.67	0.62	0.57	0.52	0.48	0.44	0.41	0.37
8.9	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.93	0.85	0.79	0.72	0.67	0.61	0.56	0.52	0.48	0.44	0.40	0.37	0.34	0.32
9.0	1.4	1.3	1.2	1.1	1.0	0.93	0.86	0.79	0.73	0.67	0.62	0.57	0.52	0.48	0.44	0.41	0.37	0.34	0.32	0.29	0.27

Table 3: Organic Constituents Numeric Criteria

Organic Constituent ^a ($\mu\text{g/L}$)	CAS Number	Chemical Family Group	Class C	Class C	Class D
			CCC 4-Day Avg	CMC 1-Hour Avg	30-Day Avg
Acenaphthene	83-32-9	Polynuclear aromatic hydrocarbon	50	—	90
Acrolein	107-02-8	Acryl aldehyde	3.0	3.0	400
Acrylonitrile	107-13-1	Nonionic organic	700.0	—	7.0 ^b
Aldrin	309-00-2	Pesticide	0.4	3.0	0.00000077 ^b
alpha-Endosulfan	959-98-8	Endosulfan	0.056	0.22	30
alpha-Hexachlorocyclohexane (HCH)	319-84-6	Hexachlorocyclohexane	—	—	0.00039 ^b
Anthracene	120-12-7	Polynuclear aromatic hydrocarbon	—	—	400
Benzene	71-43-2	Hydrocarbon	1,000	—	16 ^b
Benzidine	92-87-5	Aromatic amine	250	—	0.011 ^b
Benzo(a)anthracene	56-55-3	Polynuclear aromatic hydrocarbon	—	—	0.0013 ^b
Benzo(a)pyrene	50-32-8	Polynuclear aromatic hydrocarbon	—	—	0.00013
Benzo(b)fluoranthene	205-99-2	Polynuclear aromatic hydrocarbon	—	—	0.0013
Benzo(k)fluoranthene	207-08-9	Polynuclear aromatic hydrocarbon	—	—	0.013
beta-Endosulfan	33213-65-9	Endosulfan	0.056	0.22	40
beta-Hexachlorocyclohexane (HCH)	319-85-7	Hexachlorocyclohexane	—	—	0.014 ^b
Bis(2-Chloroethyl) Ether	111-44-4	Chloroalkyl ether	—	—	2.2
Bis(Chloromethyl) Ether	542-88-1	Chloroalkyl ether	—	—	0.017
Bis(2-Chloro-1-methylethyl) Ether	108-60-1	Chloroalkyl ether	—	—	4,000
Bis(2-Ethylhexyl) Phthalate	117-81-7	Phthalate ester	—	—	0.37 ^b
Bromoform	75-25-2	Halomethane	—	—	120 ^b
Butylbenzyl Phthalate	85-68-7	Phthalate ester	—	—	0.10
Carbaryl (Sevin)	63-25-2	Insecticide	2.1	2.1	—
Carbon Tetrachloride	56-23-5	Halomethane	1,000	—	5 ^b
Chlordane	57-74-9	Insecticide	0.0043	2.4	0.00032 ^b

Organic Constituent ^a (µg/L)	CAS Number	Chemical Family Group	Class C	Class C	Class D
			CCC 4-Day Avg	CMC 1-Hour Avg	30-Day Avg
Chlorobenzene	108-90-7	Chlorinated benzene	—	—	800
Chlorodibromomethane	124-48-1	Halomethane	—	—	21 ^b
Chloroform	67-66-3	Halomethane	3,000	—	2,000 ^b
2-Chloronaphthalene	91-58-7	Chlorinated naphthalene	200	—	1,000
2-Chlorophenol	95-57-8	Chlorinated phenol	100	—	800
Chlorophenoxy Herbicide (2,4-D)	94-75-7	Herbicide	—	—	12,000
Chlorophenoxy Herbicide (2,4,5-TP) [Silvex]	93-72-1	Herbicide	—	—	400
Chrysene	218-01-9	Polynuclear aromatic hydrocarbon	—	—	0.13 ^b
Dibenzo(a,h)anthracene	53-70-3	Polynuclear aromatic hydrocarbon	—	—	0.00013 ^b
1,2-Dichlorobenzene	95-50-1	Chlorinated benzene	200	—	3,000
1,3-Dichlorobenzene	541-73-1	Chlorinated benzene	200	—	10
1,4-Dichlorobenzene	106-46-7	Chlorinated benzene	200	—	900
3,3'-Dichlorobenzidine	91-94-1	Chlorinated aromatic amine	10	—	0.15 ^b
Dichlorobromomethane	75-27-4	Halomethane	—	—	27 ^b
1,2-Dichloroethane	107-06-2	Chlorinated ethane	—	—	650 ^b
1,1-Dichloroethylene	75-35-4	Dichloroethylene	—	—	20,000 ^b
2,4-Dichlorophenol	120-83-2	Chlorinated phenol	200	—	60
1,2-Dichloropropane	78-87-5	Volatile organic compound	2,000	—	31 ^b
1,3-Dichloropropene	542-75-6	Chlorocarbon	—	—	12
Dieldrin	60-57-1	Organochloride insecticide	0.056	0.24	0.0000012 ^b
Diethyl Phthalate	84-66-2	Phthalate ester	—	—	600
2,4-Dimethylphenol	105-67-9	Semivolatile organic compound	200	—	3,000
Dimethyl Phthalate	131-11-3	Phthalate ester	—	—	2,000
Di-n-Butyl Phthalate	84-74-2	Phthalate ester	—	—	30
2,4-Dinitrophenol	51-28-5	Dinitrophenol	—	—	300
Dinitrophenols	25550- 58-7	Dinitrophenol	—	—	1,000
2,4-Dinitrotoluene	121-14-2	Amino compound	33	—	1.7
1,2-Diphenylhydrazine	122-66-7	Semivolatile organic compound	30	—	0.2 ^b
Endosulfan Sulfate	1031-07-	Chlorinated	—	—	40

Organic Constituent ^a (µg/L)	CAS Number	Chemical Family Group	Class C	Class C	Class D
			CCC 4-Day Avg	CMC 1-Hour Avg	30-Day Avg
	8	hydrocarbon insecticide			
Endrin	72-20-8	Insecticide	0.036	0.086	0.03
Endrin Aldehyde	7421-93-4	Pesticide	—	—	1
Ethylbenzene	100-41-4	Aromatic hydrocarbon	40	—	130
Fluoranthene	206-44-0	Polynuclear aromatic hydrocarbon	400	—	20
Fluorene	86-73-7	Polynuclear aromatic hydrocarbon	—	—	70
gamma-BHC (Lindane)	58-89-9	Hexachlorocyclohexane	0.08	0.95	4.4 ^b
Guthion	86-50-0	Organophosphate	0.01	—	—
Heptachlor	76-44-8	Organochlorine insecticide	0.0038	0.52	0.0000059 ^b
Heptachlor Epoxide	1024-57-3	Organochlorine insecticide	0.0038	0.52	0.000032 ^b
Hexachlorobenzene	118-74-1	Chlorinated benzene	—	—	0.000079 ^b
Hexachlorobutadiene	87-68-3	Chlorinated aliphatic diene	10	—	0.01 ^b
Hexachlorocyclohexane (HCH) -Technical	608-73-1	Insecticide	—	—	0.010
Hexachlorocyclopentadiene	77-47-4	Organochlorine	0.5	—	4
Hexachloroethane	67-72-1	Chlorinated ethane	—	—	0.1 ^b
Indeno(1,2,3-cd)pyrene	193-39-5	Polynuclear aromatic hydrocarbon	—	—	0.0013 ^b
Isophorone	78-59-1	Cyclic ketone	1,000	—	1,800 ^b
Malathion	121-75-5	Organophosphate	0.1	—	—
Manganese	7439-96-5	Mineral element (metal)	—	—	100
Methoxychlor	72-43-5	Organochlorine insecticide	0.03	—	0.02
Methyl Bromide	74-83-9	Halomethane	—	—	10,000
3-Methyl-4-Chlorophenol	59-50-7	Antimicrobial pesticide (disinfectant)	—	—	2,000
2-Methyl-4,6-Dinitrophenol	534-52-1	Dinitrophenol	—	—	30
Methylene Chloride	75-09-2	Halomethane	—	—	1,000 ^b
Mirex	2385-85-5	Organochloride insecticide	0.001	—	—
Nitrobenzene	98-95-3	Organic compound	1,000	—	600
Nitrosamines	N/A	A nitroso group bonded	600	—	1.24

Organic Constituent ^a (µg/L)	CAS Number	Chemical Family Group	Class C	Class C	Class D
			CCC 4-Day Avg	CMC 1-Hour Avg	30-Day Avg
		to an amine			
Nitrosodibutylamine, N	924-16-3	Nitrosamine	—	—	0.22
Nitrosodiethylamine, N	55-18-5	Nitrosamine	—	—	1.24
Nitrosopyrrolidine, N	930-55-2	Nitrosamine	—	—	34 ^b
N-Nitrosodimethylamine	62-75-9	Nitrosamine	—	—	3.0 ^b
N-Nitrosodi-n-Propylamine	621-64-7	Nitrosamine	—	—	0.51 ^b
N-Nitrosodiphenylamine	86-30-6	Nitrosamine	—	—	6.0 ^b
Nonylphenol	84852-15-3	Alkyl-phenols	6.6	28	—
Parathion	56-38-2	Organophosphate	0.013	0.065	—
Pentachlorobenzene	608-93-5	Chlorinated benzene	—	—	0.1
Pentachlorophenol	87-86-5	Chlorinated phenol	See Note c	See Note c	0.04 ^b
Phenol	108-95-2	Phenol	—	—	300,000
Polychlorinated Biphenyls (PCBs)	N/A	Organochlorine	0.014 ^d	—	0.000064 ^d
p,p'-Dichlorodipenyldichloroethane (DDD)	72-54-8	Organochloride	0.001	1.1	0.00012 ^b
p,p'-Dichlorodipenyldichloroethylene (DDE)	72-55-9	Organochloride	0.001	1.1	0.000018 ^b
p,p'-Dichlorodipenyltrichloroethane (DDT)	50-29-3	Organochloride	0.001	1.1	0.000030 ^b
Pyrene	129-00-0	Polynuclear aromatic hydrocarbon	—	—	30
2,3,7,8-TCDD (Dioxin)	1746-01-6	Polychlorinated dibenzodioxins	—	—	0.0000000051 ^b
1,2,4,5-Tetrachlorobenzene	95-94-3	Chlorinated benzene	—	—	0.03
1,1,2,2-Tetrachloroethane	79-34-5	Chlorinated ethane	—	—	3 ^b
Tetrachloroethylene	127-18-4	Chlorinated hydrocarbons	800	—	29 ^b
Toluene	108-88-3	Aromatic hydrocarbon	600	—	520
Toxaphene	8001-35-2	Organophosphate insecticide	0.0002	0.73	0.00071 ^b

Organic Constituent ^a ($\mu\text{g/L}$)	CAS Number	Chemical Family Group	Class C	Class C	Class D
			CCC 4-Day Avg	CMC 1-Hour Avg	30-Day Avg
Trans-1,2-Dichloroethylene	156-60-5	Dichloroethylene	—	—	4,000
Tributyltin (TBT)	688-73-3	Organotin	0.072	0.46	—
1,2,4-Trichlorobenzene	120-82-1	Chlorinated benzene	—	—	0.076
1,1,1-Trichloroethane	71-55-6	Chlorinated ethane	—	—	200,000
1,1,2-Trichloroethane	79-00-5	Chlorinated ethane	—	—	8.9 ^b
Trichloroethylene	79-01-6	Halocarbon	1,000	—	7 ^b
2,4,5-Trichlorophenol	95-95-4	Chlorinated phenol	—	—	600
2,4,6-Trichlorophenol	88-06-2	Chlorinated phenol	—	—	2.8 ^b
Vinyl Chloride	75-01-4	Organochloride	—	—	1.6 ^b

Notes:

^a For constituents with blank numeric criteria, EPA has not calculated standards at this time. However, permit authorities will address these constituents in NPDES permit actions using the narrative criteria for toxics.

^b The criteria is based on carcinogenicity of 10^{-6} risk level.

^c The formulas for calculating the concentrations of substances indicated above are as follows:

[I] The numerical CCC for pentachlorophenol in $\mu\text{g/L}$ shall be given by:

$$e^{(1.005(\text{pH}) - 5.134)}$$

[I.A] The numerical CMC for pentachlorophenol in $\mu\text{g/L}$ shall be given by:

$$e^{(1.005(\text{pH}) - 4.869)}$$

^d The polychlorinated biphenyls (PCB) criterion applies to total PCBs (*e.g.*, the sum of all congener, isomer, homolog, or Aroclor analyses.)

Section 1199 is amended to read as follows:

1199 DEFINITIONS

1199.1 When used in this chapter, the following terms shall have the meanings ascribed:

Acute toxic – the concentration of a substance that is lethal to fifty percent (50%) of the test organisms within ninety-six (96) hours, also referred to as the LC₅₀.

Ambient – those environmental conditions existing before or upstream of a source or incidence of pollution.

Anadromous fish – fish that spend most of their lives in saltwater but migrate into freshwater tributaries to spawn.

Aquatic life – all animal and plant life including, but not limited to, rooted underwater grasses found in District waters.

Background water quality – the levels of chemical, physical, biological, and radiological constituents or parameters in the water upgradient of a facility, practice, or activity and which have not been affected by that facility, practice, or activity.

Best management practices (BMPs) – schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to the waters of the District. BMPs also include practices found to be the most effective and practical means of preventing or reducing point and nonpoint source pollution to levels that are compatible with water quality goals.

Contamination – an impairment of water quality by biological, chemical, physical, or radiological materials which lowers the water quality to a degree that creates a potential hazard to the environment or public health or interferes with a designated use.

Criteria – any of the group of physical, chemical, biological, and radiological water quality parameters and the associated numerical concentrations or levels that compose the numerical standards of the water quality standards and that define a component of the quality of the water needed for a designated use.

CCC or Criterion Continuous Concentration – the highest concentration of a pollutant to which aquatic life can be exposed for an extended period of time (four (4) day average) without deleterious effects at a frequency that does not exceed more than once every three (3) years.

CMC or Criterion Maximum Concentration – the highest concentration of a pollutant to which aquatic life can be exposed for a short period of time (one (1) hour average) without deleterious effects at a frequency that does not exceed more than once every three (3) years.

Consumption of fish and shellfish – the human ingestion of fish and shellfish, which is not chemically contaminated at a level that will cause a significant adverse health impact, caught from the District's waters.

Current use – the use that is generally and usually attained based upon the water quality in the waterbody.

Department – the Department of Energy and Environment, or any successor agency.

Designated use – the use specified for the waterbody in these water quality standards whether or not they are being attained.

Director – the Director of the Department, or his or her designee.

District waters – the waters of the District of Columbia.

e – base e exponential function.

Early warning value – a concentration that is a percentage of, or a practical quantitation limit for, a groundwater quality criterion or enforcement standard.

EPA – United States Environmental Protection Agency.

Enforcement standard – the value assigned to a contaminant for the purpose of regulating an activity, which may be the same as the criterion for that contaminant.

Existing use – the use actually attained in the waterbody on or after November 28, 1975.

Federal Clean Water Act – the Federal Water Pollution Control Act Amendments of 1972, approved October 18, 1972 (86 Stat. 816; 33 U.S.C. § 1251 *et seq.*), as amended.

Geometric mean (GM) – the n^{th} root of the product of n numbers.

Groundwater – underground water, excluding water in pipes, tanks, and other containers created or set up by people.

Harmonic mean flow – the number of daily flow measurements divided by the sum of the reciprocals of the flows. It is the reciprocal of the mean of the reciprocals.

High quality waters – waters of a quality that is better than needed to protect fishable and swimmable streams.

Landfill – a disposal facility or part of a facility at which solid waste is permanently placed in or on land and which is not a land spreading facility.

Land spreading disposal facility – a facility that applies sludge or other solid wastes onto the land or incorporates solid waste in the soil surface at greater than vegetative utilization and soil conditioners/immobilization rates.

LC₅₀ or lethal concentration – the numerical limit or concentration of a test material mixed in water that is lethal to fifty percent (50%) of the aquatic organisms exposed to the test material for a period of ninety-six (96) hours.

Load or loading – an amount of matter or thermal energy that is introduced into a receiving water; to introduce matter or thermal energy into a receiving water. Loading may be either man-caused (pollutant loading) or natural (natural background loading).

Mixing zone – a limited area or a volume of water where initial dilution of a discharge takes place and where numerical water quality criteria may be exceeded but acute toxic conditions are prevented from occurring.

Narrative criteria – a condition that should not be attained in a specific medium to maintain a given designated use and that is generally expressed in a “free from” format.

Navigation – the designated use for certain District waters. This designation applies to waters that are subject to the ebb and flow of the tides, or waters that are presently used, may have been used, or may be used for shipping, travel, and transportation of interstate or foreign commerce by vessel.

Nonpoint source – any source from which pollutants are or may be discharged other than a point source.

Nontidal waters – waters in the streams not subject to regular and periodic tidal action.

Numerical criteria – the maximum level of a contaminant, the minimum level of a constituent, or the acceptable range of a parameter in water to maintain a given designated use.

Permit or permitted – a written authorization issued or certified by the Director under pertinent laws and regulations for an activity, facility, or entity to discharge, treat, store, or dispose of materials or wastes.

Point of compliance – the point or points that must not be exceeded to comply with a water quality enforcement standard or criterion.

Point source – any discrete source of quantifiable pollutants, including a municipal treatment facility discharge, residential, commercial or industrial waste discharge, a combined sewer overflow; or any discernible, confined, and discrete conveyance, including any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, or concentrated animal feeding operation from which contaminants are or may be discharged.

Pollution – the man-made or man-induced alteration of the chemical, physical, biological, or radiological integrity of water.

Pollutant – any substance that may alter or interfere with the restoration or maintenance of the chemical, physical, radiological, or biological integrity of the waters of the District, including dredged soil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, hazardous wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, oil, gasoline and related petroleum products, and industrial, municipal, and agricultural wastes.

Practical quantitation limit – the lowest concentration of a substance that generally can be determined by qualified laboratories within specified limits of precision and accuracy under routine laboratory operating conditions in the matrix of concern.

Primary contact recreation – those water contact sports or activities that result in frequent whole body immersion or involve significant risks of ingestion of the water (Class A).

Responsible party – any person who has caused or is causing pollution or has created or is creating a condition from which pollution is likely to occur.

Secondary contact recreation – those water contact sports or activities that seldom result in whole body immersion or do not involve significant risks of ingestion of the water (Class B).

Semi-anadromous fish – fish that spend most of their lives in tidally influenced low to medium salinity waters but migrate to freshwater tributaries to spawn.

Short-term degradation – the period during which the waterbody may be degraded based on the nature of the pollutant and the degree of its environmental or human health impact, as determined by the Director on a case-by-case basis.

Solid waste – all putrescible and non-putrescible solid and semisolid wastes, including garbage, rubbish, ashes, industrial wastes, swill, demolition and construction wastes, abandoned vehicles or parts thereof, and discarded commodities. This term also includes all liquid, solid, and semisolid materials that are not the primary products of public, private, industrial or commercial mining, and agricultural operations.

Standards – those regulations, in the form of numerical, narrative, or enforcement standards, that specify a level of quality of the waters of the District necessary to sustain the designated uses.

Statistical threshold value (STV) – the statistical threshold value is based on the water quality distribution observed during EPA’s epidemiological studies. STV approximates the 90th percentile of the water quality distribution and is intended to be a value that should not be exceeded by more than 10 percent of the samples used to calculate the geometric mean.

Surface impoundment – a facility or part of a facility that is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials (although it may be lined with man-made materials), and that is designed to hold an accumulation of liquids or sludge.

Surface waters – all rivers, lakes, ponds, wetlands, inland waters, streams, and other water and water courses within the jurisdiction of the District of Columbia.

Tidally influenced waters – surface waters within the Potomac River, the Anacostia River, and all embayments and tributaries to these rivers that are under the influence of tidal exchange.

Toxic substance – any substance or combination of substances that after discharge and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, may cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunctions in reproduction), or physical deformities in the organism or its offspring.

Trend analysis – a statistical methodology used to detect net changes or trends in contaminant levels over time.

Water Effect Ratio or (WER) – the ratio of the site water LC₅₀ value to the laboratory water LC₅₀ value.

Waters of the District or District waters – flowing and still bodies of water, whether artificial or natural, whether underground or on land, so long as in the District of Columbia, but excluding water on private property prevented from reaching underground or land watercourses, and also excluding water in closed collection or distribution systems.

Wetland – a marsh, swamp, bog, or other area periodically inundated by tides or having saturated soil conditions for prolonged periods of time and capable of supporting aquatic vegetation.

Wildlife – all animal life whether indigenous or migratory regardless of life stage including, but not limited to, birds, anadromous and semi-anadromous fish, shellfish, and mammals including sensitive species that are found in or use the District waters.

1199.2 When used in this chapter, the following abbreviations shall have the meaning ascribed:

BMPs	best management practices
°C	degrees centigrade or Celsius
CaCO ₃	calcium carbonate
CCC	criterion continuous concentration
CMC	criterion maximum concentration
cfu	colony forming units
CF	conversion factor
DOEE	Department of Energy and Environment
e	base e exponential function
<i>E. coli</i>	<i>Escherichia coli</i>
EPA	United States Environmental Protection Agency
GM	geometric mean
IRIS	EPA's Integrated Risk Information System database
L	liter
LC ₅₀	lethal concentration
ln	natural logarithm
m	meter
mg/L	milligrams per liter
mg TAN/L	milligrams of total ammonia nitrogen per liter
mL	milliliter
µg/L	microgram per liter
NPDES	National Pollutant Discharge Elimination System
NTU	Nephelometric turbidity units
PCBs	polychlorinated biphenyls
pH	hydrogen ion concentration
q1*	carcinogenic potency slope factor
STV	statistical threshold value
SWDC	Special Waters of the District of Columbia

TAN	total ammonia nitrogen
WER	Water-Effect Ratio
WQS	water quality standards

The proposed regulations are available for viewing at <https://doee.dc.gov/service/water-quality-regulations>. To pick up a copy of these proposed regulations at 1200 First Street NE, 5th Floor, Washington, DC 20002, call Rebecca Diehl at (202) 535-2648 and mention this Notice by name. All persons desiring to comment on the proposed regulations should file comments in writing not later than sixty (60) days after the publication of this notice in the *D.C. Register*.

Comments on the proposed rule and the scope and approach to the required Water Quality Criteria Impact Analysis should identify the commenter and be clearly marked “DOEE Water Quality Standards, Proposed Rule Comments.” Comments may be (1) mailed or hand-delivered to DOEE, Water Quality Division, 1200 First Street NE, 5th Floor, Washington, D.C. 20002, Attention: DOEE Water Quality Standards, or (2) sent by e-mail to WQS@dc.gov, with the subject indicated as “DOEE Water Quality Standards Proposed Rule Comments.”